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ABSTRACT

This document is the third in a series of 12 early childhood program descriptions compiled by the Far West Laboratory for Educational Research and Development. The program described here is the Cognitive Curriculum developed by David Weikart at the High/Scope Educational Research Foundation at Ypsilanti, Michigan. The Cognitive Curriculum, which serves children from preschool through third grade, is based on Piaget's developmental theory and is designed to teach cognitive skills. The program advocates that children be actively involved in their learning and that they learn to deal with concrete objects before they learn about abstract symbols. A home visitor program is recommended by the developer. Evaluation data are available which support the program's effectiveness. Included in the program description are brief outlines of: (1) goals and objectives, (2) content and materials, (3) classroom activities, (4) parent involvement, (5) professional and paraprofessional training, (6) administrative requirements and costs, (7) program development and evaluation, and (8) program history and present (1971) status. (JMB)

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Early Childhood
Information Unit
November 1971

Program Report

THE COGNITIVE CURRICULUM

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High/Scope Educational Research Foundation
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TABLE OF CONTENTS

Summary

Goals and Objectives 1
For whom is the program designed? 1
What are the goals and objectives of the program? 1
What is the rationale for the program emphasis and design? 3

Content and Materials 4
How is the program designed to be used? 4
What skills, concepts, and attitudes are to be learned? 4
How is the curriculum organized? 6
What student materials are provided or suggested? 9
What materials are provided or suggested for the teacher? 12
What materials are provided or suggested for student testing? 13

Classroom Activities 14
What is the teaching-learning strategy? 14
What classroom organization is best suited to this approach? 16
How are students evaluated? 18
What is a representative lesson? 19

Parent Involvement 21
To what extent are parents involved? 21
What materials are available for training parents? 22

Professional and Paraprofessional Training 24
What skills or knowledge do teachers require? 24
Are training programs available for professionals and paraprofessionals? 24
What materials are available for professional and paraprofessional training? 25

Administrative Requirements and Costs 26
What facilities and physical arrangements are needed or recommended? 26
What special equipment is needed or recommended? 26
What professional and paraprofessional personnel are needed or recommended? 26
What does it cost to implement the program? 28
Are the curriculum materials available? 28

Program Development and Evaluation 29
What is the research base for the program? 29
How was the program developed and tested? 29
What evaluation studies have been conducted? 30

Program History and Present Status 35
What is the history of the program? 35
What is the present state of development? 35

Selected References 36

Summary

The Cognitive Curriculum, based on the developmental theory of Piaget, is a preschool through third grade program, designed to teach cognitive or thinking skills. To the developer of the program, David Weikart, cognitive skills refer to the ways or concepts children use to organize and interpret relationships among objects and events in the environment. For example, children in this program learn to classify things according to concepts such as size, shape or use. These cognitive skills are considered essential for later skill development in subject matters.

The Cognitive Curriculum provides a framework which outlines areas of cognitive competancy. Within this framework, the teacher plans activities geared to children's level of functioning. The program advocates that children be actively involved in learning that they progress in a step by step fashion, learning to deal with concrete objects before they learn about abstract symbols.

A home visitor program is recommended by the developer. Classroom teachers visit homes every week to learn about special interests of the child and to encourage parents to play an active part in their child's education.

The developer has collected data that support the effectiveness of the Cognitive Curriculum approach. Evaluation data gathered during the early years of the program are available. Standardized intelligence and achievement test scores were obtained on five groups of graduates of the program from pre-kindergarten through the third grade. Test scores from these groups were compared with those from other children who did not have the exposure to the program. Results generally show differences in intelligence and achievement scores that favor the graduates of the program.

GOALS AND OBJECTIVES

For whom is the program designed?

The Cognitive Curriculum preschool program was designed by the High/Scope Educational Research Foundation for "educationally disadvantaged" three- and four-year-old children. However, it can be used with children of all abilities. It has now been extended for grades K-3 in Follow Through programs.

What are the goals and objectives of the program?

The program has derived two broad objectives from the theory of Jean Piaget:

1. To help the child develop logical modes of thought through concept formation.
   a. to gain knowledge about himself and objects,
   b. to see relationships between himself and things in his environment,
   c. to group and order objects and events.

2. To help the child develop the capacity to manipulate symbols and thus to act on and represent the environment.

To understand these objectives, one must first understand a few of the basic facts of Piaget's theory of children's intellectual development. Piaget's work on the development of logical thinking and representation form the framework for the curriculum design. To Piaget, logical thinking and the ability to represent the environment are developed when a child (a) learns about himself and surrounding objects through his activity; (b) observes relationships among objects and events; and (c) begins to group and order objects and events in his environment. Once he can understand what he sees, he can start to use symbols and language to communicate what he sees and knows. Development occurs in a series of stages with the early stages preparing for and providing the basis for later stages. In each stage the direction of development is always from the simple to the complex, the concrete to the abstract. All children go through the same sequences of development; children from ages two to seven are in the second stage in Piaget's scheme, the "pre-operational" period.

Piaget believes children learn by actively involving themselves in their environment. The Cognitive Curriculum was designed to encourage active involvement and to get children to "act on and represent the environment." To implement the two objectives outlined above, the High/Scope Foundation staff outlined four

cognitive (or intellectual) skill areas. For each of the skill areas, the staff identified preschool curriculum goals. The staff describes the four skill areas and their curriculum goals as follows:

Classification. Classification is learning to recognize similarities and dissimilarities among objects and the ability to group them on this basis. For a child in the preschol stage of development, there is no wrong or right way of grouping; in this area the teacher "reinforces" the child's awareness that things go together because they share certain common characteristics.

In the Cognitive Curriculum children learn first that things go together because they are used for some activity (e.g. paint and paintbrush) or because they derive their meaning from each other (e.g. hammer and nail). More complex groupings are based on characteristics that can be perceived, such as size and shape or color.

Seriation. In learning seriation, or ordering skills, the child learns to arrange objects in an order by size, quality, or quantity (e.g. small to large; soft to hard; same, more, less). The preschool goal is to enable the child to deal with four sizes, three qualities, and four quantities.

Spatial Relations. Spatial relations is concerned with the child's understanding of his relation to objects and the relation of objects to each other in terms of direction, distance, and perspective. In less complex terms, the child acquires body awareness and the concepts of position (e.g. in/out), direction, (e.g. to/from), and distance (e.g. near/far).

Temporal Relations. To understand temporal relations is to understand time sequences. In this skills area, the child learns that time periods begin and end, and he begins to understand that events can be ordered sequentially. The concepts of first, last, before, after, and next are always reinforced.

For each skill area there are many activities designed to achieve the desired curriculum objectives. In the guidelines provided by the staff, these activities are further broken down into Piaget's levels of representation and levels of operation. These levels will be discussed in detail in the following section on Content and Materials.

The Cognitive Curriculum has in addition to the classroom preschool program a home teaching program. Teachers visit the children's homes one afternoon a week to individualize the curriculum at home and involve parents in the educational process. The goals of this parent involvement component of the program are as follows:

1. To involve parents in the teaching process in order to give them a background of knowledge concerning the educational needs of their children so that they can provide educational support at home.

2. To implement the curriculum on a one-to-one basis with the child in the home.

To achieve these goals, parents are encouraged to both observe and participate in teaching activities during the home visits. This parent involvement aspect of the program will be discussed in the Parent Involvement section.

What is the rationale for the program emphasis and design?

The developers state that although traditional nursery school techniques have proven successful in preparing middle class children for public school education, they have proven ineffective in helping the non-middle class child. They point to research showing that the kinds of skills non-middle class children most often lack are cognitive skills and that preschool curricula for these children must stress cognitive growth in addition to social and emotional development. Traditional preschools emphasize such things as establishing routine health habits, motor skills such as running, balancing and climbing, and learning control and restraint more than language and intellectual development.

The developers of the Cognitive Curriculum wanted to design a program which specifically focused on intellectual growth and one which would help children begin to organize the complex world around them. To them the theories of Jean Piaget offered the most insight into the development of intelligence. Piaget states that each step in intellectual growth makes the next step possible. This developmental theory suggested to them ways of devising a curriculum which would follow the sequence Piaget described. The framework for the Cognitive Curriculum was then developed using Piaget's concepts. This framework is described in detail in the following section.

CONTENT AND MATERIALS

How is the program designed to be used?

The Cognitive Curriculum is a two-year, preschool program designed for three- and four-year-old children. The program consists of a cognitively oriented morning preschool (daily two-and-a-half hour class) and biweekly, 90-minute home visits by the teachers that involve both the children and the parents.

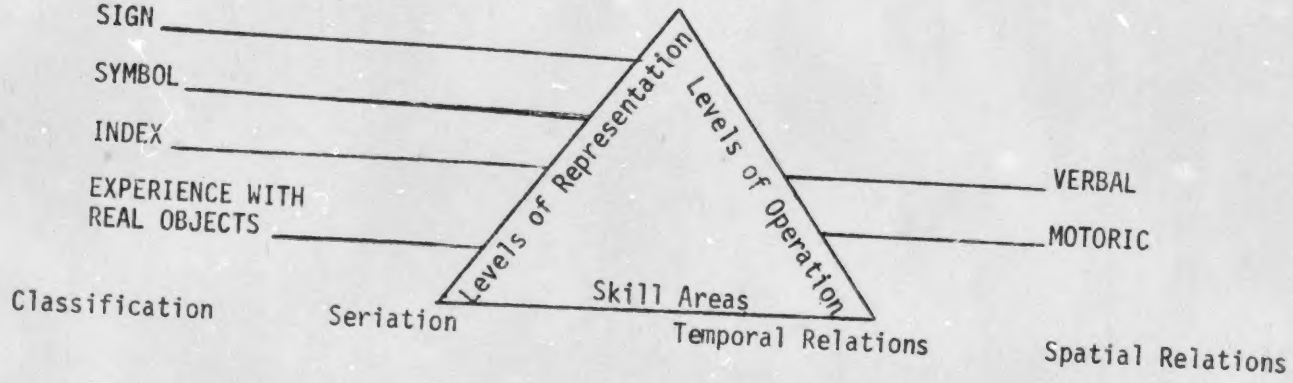
What skills, concepts, and attitudes are to be learned?

The Cognitive Curriculum is designed to develop abilities and concepts rather than subject matter skills. The focus in the curriculum is not directly on the ability to read and write. It is to develop the child's ability to represent his environment, thereby providing the foundations and prerequisites for reading and writing. To do this, the staff has devised a three-sided curriculum framework.

The three-sided framework includes:

1. The four cognitive skill areas (classification, seriation, spatial relations, and temporal relations) which were described in the Goals and Objectives section,
2. The three levels of representation--index level, symbol level, and sign level,
3. The two levels of operation--motoric and verbal.

The developers diagram this framework in the following manner:



The levels of representation describe the stages children go through as they develop logical ways of viewing their environment. It is assumed that all children go through these stages, although the age at which they are at each level may vary. The Cognitive Curriculum sees these stages as a part of intellectual development and tries to provide the "maximum amount of information and exploration on each level for each child." Because this is a developmental theory, the levels of representation are ordered by degree of complexity. Experience with real objects provides the foundation for the later levels.

Briefly, the kinds of ability the child develops at each level are described below:

Index level: At the index level, the child learns about the objects he sees. The child can mentally construct the whole object when (a) only part of it is seen, (b) it is perceived through senses other than sight, and (c) a part is missing. For example, the head of a duck gradually comes to stand for a duck and the ringing of the telephone comes to stand for the telephone.

Symbol level: At the symbol level, the child is able to deal with representations of objects. His mental images of real objects are clearer, and his ability to use language and become involved in dramatic play increases. An example of representation at the symbol level would be the child's ability to draw a picture of a duck or to make a clay model of a telephone.

Sign level: All activities and processes learned at the symbol level help to build a foundation for the sign level. The sign level means representation through written words and numerals and is not stressed at the preschool level.

At the third side of the triangular curriculum structure are the levels of operation. As mentioned previously, the curriculum is based on the premise that children learn by being actively involved with their environment. For this reason, the curriculum attempts to provide opportunities for the child to physically experience a variety of equipment and materials, while at the same time helping him to verbalize these experiences.

Motoric level: At the motoric level, the child uses his body to experience and interact with his surroundings. The teacher uses language as a means to identify the child's interactions and to build a language foundation for him.

Verbal level: At the verbal level, the child is still actively involved with his surroundings but is beginning to use language as a tool for communication. The developers elaborate:

The child begins to do the following: (a) incorporate and use language more spontaneously while the teacher is providing language stimulation to draw attention to aspects of the environment; (b) use language to express himself, describe his actions and label objects; (c) use words to express himself as a form of communication with other people, to plan, evaluate and interpret his actions, and to describe situations and feelings.

From this framework, the teacher organizes her classroom activities. This process is described below.

How is the curriculum organized?

The teachers make daily and weekly lesson plans based upon the three-sided curriculum framework described above. Through their home visits and their observations of the children in the classroom, the teachers make an ongoing assessment of the developmental level of each child--his level of operation and representation--and of his progress in the cognitive skill areas. Their teaching goals for each child are based on this assessment and are incorporated in the lesson plans.

The final report on the Ypsilanti Perry Preschool Project includes a sample activity guide. (The Cognitive Curriculum evolved from the Perry Preschool Project. See Program Development and Evaluation.) The staff cautions that this guide is not a curriculum script that should be strictly adhered to but instead can be used as an illustration of a sequence of activities appropriate to a given skill area and presented according to the levels of representation. These activities are only samples of what the teacher can implement in the daily preschool; she should always base her learning activities on the individual child and on her particular learning goals for that child and the whole group.

The activity guide is organized according to the cognitive skill areas--classification, seriation, spatial relations, and temporal relations (see the Goals and Objectives section for definitions of these areas). The teacher first determines which skill area to emphasize, then determines each child's level of representation and operation, and then uses the activity guide for examples of what she can do in the classroom. For each of the four skill areas, the teacher will find conceptual focuses (concepts to be learned), the level of representation, and sample activities for teaching the concept divided into motoric and verbal components.

This separation of activities into motoric and verbal components is meant to assist the teacher in keeping the two levels of operation in mind as she is teaching. Because the child usually experiences concepts

motorically before he is able to verbalize them, the teacher must talk to the child about what he is doing. In the curriculum, the child's physical actions are always accompanied by some form of verbal stimulation.

The activity guide is organized to reflect the progression from simple tasks to difficult ones. This way of organizing the guide is meant to give the teacher an overall perspective of a typical school year. The table of contents for the activity guide shows the organization of the learning concepts:

TABLE OF CONTENTS

Skill Area	Conceptual Focus	Level of Representation
Classification	Relational	Index Symbol
	Descriptive	Index Symbol
	Generic	Index Symbol
Seriation	Ordering Sizes	Index Symbol
	Ordering Quantities	Index Symbol
	Ordering Qualities	Index Symbol
Spatial Relations	Body Awareness and Body Concept	Index Symbol
	Position	Index Symbol
	Direction	Index Symbol
	Distance	Index Symbol
Temporal Relations	Beginning and End of Time Intervals	Index Symbol
	Ordering of Events Within Time Periods	Index Symbol
	There are Different Lengths of Time	Index Symbol

An example of an activity from each of the four skill areas will further demonstrate how a teacher can use the guide.

CLASSIFICATION

Conceptual Focus: Relational

Level of Representation: Index

Activities

Motoric	Verbal
1. Show objects such as a hammer, nail, screw, screwdriver, and have the children put the objects together that go together.	1. a. Child and teacher identify the objects used. b. Teacher provides verbal directions: "Put two things that go together here." (She may first demonstrate and explain this before asking children to do the task.) 2. Children state why the grouped objects are related: e.g., "We use a hammer to hit the nail."

SERIATION

Conceptual Focus: Ordering Sizes

Level of Representation: Index

Activities

Motoric	Verbal
1. Children interact with classroom equipment, e.g., big blocks and little blocks or big dolls and little dolls.	1. a. Teacher consistently and constantly verbalizes the size relationships. b. Child begins using terms to differentiate the sizes.

SPATIAL RELATIONS

Conceptual Focus: Direction

Level of Representation: Symbol

Activities

Motoric

1. Children draw or trace shapes and figures.

Verbal

1. a. Teacher tells the child what direction he is drawing in: up, down, or around.

   b. Children tell what direction they are drawing in.

TEMPORAL RELATIONS

Conceptual Focus: Beginning and End of Time Intervals

Level of Representation: Symbol

Activities

Motoric

1. Books and stories.

Verbal

1. a. Teacher emphasizes the *beginning* and *end* of a story.

   b. Children tell when to begin reading a book and when the book ends; e.g., "*Start* the book now;" "The book is *finished*."

What student materials are provided or suggested?

It is not necessary to purchase special student materials to implement the Cognitive Curriculum. The materials found in most traditional preschools can be used to achieve the objectives of the curriculum, however, the developers state that the teacher will use the standard materials in new ways--always for specific predeter-

mined instructional purposes. The program also suggests that many of the art materials can be made by the children, combining an enjoyable activity with a learning experience. For example, playdough can be made by mixing flour, water, salt, and food coloring and can help children experience the sequencing of events, the "events" being the mixing of ingredients--e.g. "*First* we pour water in flour, *next* we add the salt," etc.

No student materials are provided or available from the program. However, the developers provide the following list of materials to illustrate the kinds of materials which "ideally would be a part of the classroom." They emphasize that these types of materials offer useful models from which the teacher can construct her own learning materials.

SUGGESTED MATERIALS AND EQUIPMENT

ART AREA

1. Construction Paper (12 x 18")
   - red
   - yellow
   - blue
   - green
   - brown
   - black
   - orange
   - violet
2. Newsprint (18 x 24")
3. White Drawing Paper (12 x 18")
4. Manila Drawing Paper (12 x 18")
5. Finger Paint Paper
6. Modeling Clay
   - red
   - yellow
   - blue
   - green
7. Paste
8. Powdered Poster Paint
   - red
   - yellow
   - blue
   - green
   - white
   - brown
   - black
   - orange
9. Paint Brushes (1/4" , 1/2", 1")
10. Scissors (blunt, sharp)
11. Crayons
12. Chalk Board
13. Pencils

QUIET AREA

1. Grade Circles, Squares, Triangles
2. Playskool Jumbo Beads
3. Cubical Counting Blocks
4. Coordination Board (different shapes)
5. Peg Board and Pegs
6. Nesting Blocks
7. Seriated Barrels
8. Table Blocks
9. Plastic Blocks (different shapes, colors)
10. Stack Rings
11. Hammer and Nail Set (Playskool)
12. Lego Blocks (different sizes)
13. Lotto Games
    - Farm Lotto
    - Zoo Lotto
    - ABC Lotto
    - Jumbo Lotto (Ed-U-Cards)
    - Deluxe Object Lotto (Ed-U-Cards)
    - Puzzle Lotto--On the Farm
14. Variety of Color and Shape Games
    - Hickety-Pickety (color game by Parker Bros.)
    - Playskool Poker Chips (color and shape)
    - Whitman Color Dominoes (color)
    - Go Fish (color by Ed-U-Cards)
15. Telephone (actual phone or realistic representation)

HOUSEKEEPING AREA

1. Dolls (3 sizes)
2. Ironing Board
3. Iron
4. Doll Beds
5. Child-size Stove, Refrigerator, Cupboard, Sink
6. Doll Bath
7. Telephone
8. Doll Carriage
9. Toaster
10. Small Table, Chairs
11. Silverware (actual silverware)
12. Pots and Pans (3 sizes)
13. Cooking Utensils (actual)
    - Large and Small Spoons
    - Large and Small Ladles
    - Large and Small Slotted Spooks
    - Large and Small Spatulas, etc.
14. Baking Equipment (actual)
    - Large and Small Cake Pans
    - Large and Small Loaf Pans
    - 3 Sizes Mixing Bowls, etc.
15. Dishes (actual)
    - Set of Large and Small Plates, Saucers, etc.
    - Set of Large and Small Cups

LARGE MOTOR AREA

1. Hollow Building Blocks (3 sizes)
2. Ramps
3. Unit Blocks (3 sizes, variety of shapes)
4. Boards for Building (2 sizes)
5. Pair of Stairs
6. Balance Beams
7. Work Bench and Tools
8. Sand Table
9. Variplay House Gym

QUIET AREA (continued)

16. Puzzles and Puzzle Cabinet
    a. Developmental Learning Materials
       - People Puzzles
       - Animal Puzzles
       - Shapes Puzzles
       - Temporal Card Sequences
       - Spatial Cards

    b. Sifo Puzzles
       - Carpenter's Tools
       - Our Farmyard
       - Farmyard Animals
       - Vegetables
       - Transportation
       - Favorite Fruits
       - Fruit
       - Buildings

    c. Judy Puzzles
       - Duck
       - Cow
       - Rooster
       - Cat
       - Farm
       - Airplane
       - Car
       - Pick-up Truck
       - Bus

    d. Playskool Puzzles
       - Draw and Paste
       - I Set the Table
       - Tractor
       - Airplane
       - Dog Group
       - School Bus
       - Farm
       - Farmer
       - Horse
17. Books (realistic to abstract) Books should be selected to coordinate with other materials in the classroom, i.e. animal books, books on vehicles, etc.)
18. Assortment of small cars, trucks, airplanes, boats, etc.
19. Records--Concept Records, Volumes I and II

LARGE MOTOR AREA (continued)

10. Clip-on Wheel and Blocks (Creative Playthings)
11. Rubber Farm Animals (2 sizes)
12. Rubber Zoo Animals (2 sizes)
13. Rubber Family
14. Balls (3 sizes)
    Different Textures
    Take Apart Ball (Creative Playthings)
15. Doll House and Doll House Furniture
16. Vehicles
    a. Wooden (Creative Playthings; Community Playthings)

Large and Small Dumptrucks	Open Van
Firetruck	Bus
Airplane	Fire Chief Car
Tractor and Trailer	Helicopter
Floor Train	Car
Derrick	Boat, etc.

    b. Metal

3 Sizes Dump Truck	3 Sizes Pick-up Truck
3 Sizes Fire Truck	3 Sizes Auto Transport
3 Sizes Garbage Truck	3 Sizes Cement Mixers, etc.

MISCELLANEOUS ITEMS

Piano
Rhythm Instruments
Tape Recorder
Language Master

What materials are provided or suggested for the teacher?

There are no teaching materials provided by the program. The Ypsilanti Preschool Curriculum Demonstration Project (which compares the Cognitive Curriculum to two other preschool programs and is described later) produced teacher training materials for the program in the form of Super 8mm films, a 16mm film, videotapes, and booklets. Volume I of the final report of the Perry Project to the U.S. Office of Education is being published jointly by ERIC (Educational Resources Information Center) and NAEYC(National Association for the Education of Young Children). This book, entitled *The Cognitively Oriented Curriculum: A Framework for Preschool Teachers*,

covers such areas as curriculum planning, teacher attitudes and commitment, classroom structure, language techniques, and field trips. It also includes an introduction to Piagetian theory, an activity guide described previously, and a selection of sample days from the Perry Project in which teachers describe how they constructed learning activities, evaluated these activities, and interpreted the children's responses.

What materials are provided or suggested for student testing?

A check list to aid in the evaluation of students may be obtained from the Research Department of the High/Scope Foundation. For additional measures of student performance see "How are students evaluated?" in the Classroom Activities section.

CLASSROOM ACTIVITIES

What is the teaching-learning strategy?

The Cognitive Curriculum uses many teaching strategies to achieve its goals. The most evident is the sequencing of the activities according to a predetermined framework. Other teaching techniques include verbal stimulation, questioning, sociodramatic play, field trips, and structuring of the class day.

The main instructional strategy is one of sequential, step-by-step skill building. The framework of the curriculum specifies the sequence in which skills should be taught. Every activity is designed to meet a specific objective. In this step-by-step process the teacher makes sure every child learns one concept before going on to a more difficult one.

Language techniques are included in the curriculum because language development is viewed as a natural part of the learning process that can be guided and stimulated by the teacher.

Verbal stimulation is a language technique in which the teacher constantly calls attention to elements in the environment by labeling them for the children. In the developer's words, verbal stimulation means that:

1. The child is exposed to a variety of language patterns as the teacher frequently explains personal actions and external occurrences that have gained the child's attention; this is supplemented by identifying specific words, using objects and motoric activity to demonstrate their meaning.

2. The child's attention is directed to the importance of recalling (a) events and their sequence in time and (b) objects and their placement in space.

3. The child is given an immediate response whenever he speaks.

4. The teacher encourages the child to *inquire* by (a) responding positively to his question, (b) pursuing answers to these question to the child's satisfaction, and (c) making use of unique occurrences which attract the child during the teaching session.

Questioning is also used as a language strategy. The objective of questioning is not simply to have the child reply verbally, but to help him use language to organize the facts he has learned through his activities.

Unlike labeling parts of the environment for the child, questioning stimulates the child to recognize relations among facts and events and helps him express these relations verbally. The teacher's style of questioning must also take into account the child's level of development so that she can ask questions relevant to the child's experiences.

The strategy of sociodramatic play is adapted from Sara Smilansky (*The Effects of Sociodramatic Play on Disadvantaged Preschool Children*). The developers say sociodramatic play occurs when:

1. a child interacts with at least one other person,
2. make-believe roles are taken by each child,
3. these roles are expressed in imitative action and verbalizations,
4. actions and verbalizations substitute for real objects and concrete situations,
5. there is sustained verbal interaction related to the play episode.

Sociodramatic play is used in the curriculum to help children learn to represent the environment through role playing and make-believe. The curriculum goals for this teaching strategy are "to help him integrate scattered experiences, and to enable the child to consider possibilities in his mind as well as with his hands, that is, to engage in 'make-believe' rather than to depend wholly on toys." Playing and evaluation by adults is important in setting up play situations. The strategy used to develop sociodramatic play skills is described by the program staff. They state that the teacher must:

1. Observe each child in terms of the criteria for sociodramatic play lsited above.
2. Add to subsequent play sequences only one element at a time from those elements missing in a child's repertory of play skills.
3. Constantly encourage the children to 'make-believe'; e.g., 'You don't need the toy, you can *make-believe*.'

Field trips are also used to meet specific curriculum goals. Because the program believes children learn

by experiencing their environment, field trips provide the opportunity to show children things that cannot be brought into the classroom. Field trips can be used to give children experiences with real objects and roles. An example of a goal-oriented field trip may be a trip to a grocery store to familiarize the children with the subcatagories of Fruit (the goal area being classification). Seeing actual fruit would aid representation at the index level (seeing an orange peel and thinking "orange") and at the symbol level (recognizing or making a clay model of an orange). Field trips also enable the teacher to check the extent to which children carry over concepts experienced in the classroom to field trip settings.

Another strategy employed by the program is the structuring of the class day. To help the child increase his attention span and to help him "bring his behavior more under his conscious control" the program has adopted a three part sequence based on suggestions from Sara Smilansky.

This sequence includes plannning, doing, and evaluating. These are incorporated into the daily routine as "planning time," "work time," and "group and juice time." During planning time the child decides where he will work during work time. To help make planning time more concrete, the children are assigned "symbols;" for example, a tree, a flower, a square, etc. Felt planning boards are set up in each of the four work areas within the classroom. After the children decide where they will work, each puts his symbol on the board in his chosen area. The child is encouraged to finish what he starts. Once he finishes his tasks. he may place his symbol in a new area.

As part of the group time activity, teachers and children discuss what they did and how they worked. Evaluation, or a recall of activities and events, also takes place throughout the day while the children are engaged in an activity.

What classroom organization is best suited to this program?

The following daily schedule will demonstrate the type of classroom organization used in the program. The daily routine usually does not vary throughout the school year so that the children will come to anticipate and predict time periods. This sequence of definite time periods for certain activities helps the children perceive time sequences and lengths of time. In following the same routine day after day, the children learn the temporal concepts *beginning* and *end*, they learn to order their activities during certain periods of time, and they learn that time periods can be of varying lengths.

Below is a sample of the daily schedule with brief descriptions of each period.

PLANNING TIME (approximately 20 minutes)

During planning time the children select the areas in which they would like to work. Planning gives the children a goal and develops the ability to plan ahead.

WORK TIME (approximately 40 minutes)

The childrer work in the area they selected in plannning time. During this time the teacher encourages the children to finish their selected activities. Once the selected task is completed the child chooses another.

During the entire work time the teacher is helping the child develop his ability to concentrate and finish what he began and to integrate the knowledge he gains by working in more than one area.

The work areas the children may choose from include the art area, large motor area, doll corner, and quiet area.

Art area: Here the children either work at activities for which the teacher has provided a specific goal or the teacher may "open" the area to the children allowing them to make materials for use in other work areas (e.g. making playdough "food" for the doll corner).

Large motor area: The equipment for this area consists of things like boards, hollow blocks, and riding toys. The teacher always uses this equipment with specific goals in mind; for example, she may have the children slide down the sliding board to teach spatial relations concepts such as *down* and *up*.

Doll corner: The doll corner provides opportunities for developing sociodramatic play skills, and enables the children to assume various roles. To emphasize body concepts in spatial relations, the teacher might use dolls and rubber figures to help the children see the connection between the doll's parts and their own body parts.

Quiet area: This area contains the "table activity" materials. Here the teacher also selects the materials for predetermined goals. Items may include puzzles, books, beads, or small cars and trucks.

CLEANUP: (approximately 15 minutes)

Children put away the materials and equipment and have bathroom time. Classification and seriation concepts are

reinforced during the cleanup and the children tell why they are putting materials in certain places.

JUICE AND GROUP TIME (approximately 30 minutes)

The children are divided into groups to enable the teacher to work more intensively on specific goals with a small number of children. This also allows the teacher to emphasize certain concepts. For example, when passing out the juice the teacher talks about who is *first*, *next*, or *last*.

ACTIVITY TIME (approximately 20 minutes)

The teacher decides each day whether the activity will be indoors or outdoors. Inside the group uses rhythm instruments, sings songs with motions, or plays circle and ball games. Outside swings, slides, a merry-go-round, and concrete cylinders are used. Outdoor activity can teach spatial concepts (e.g., up, down) and temporal relations (e.g., fast, slow).

CIRCLE TIME: (approximately 15 minutes)

The circle time winds up the day's activity and reviews what the children have done. Activities involving the whole group are used to reinforce concepts learned.

DISMISSAL: (approximately 10 minutes)

This time is viewed as a teaching time. The teachermay have the children sing while they are preparing to leave. Songs may reinforce concepts learned that day--for example, "Put your mitten *on* your hand, *on* your hand."

How are students evaluated?

The Stanford-Binet IQ test, teacher ratings of the children's behaviors (using a check list developed by the research staff), and other evaluative and observational instruments are used. The developers state that these instruments, which are available from the Research Department of the High/Scope Foundation, include measures of pupil interaction, teacher-pupil interaction, personality types, attitudes, and achievement. All students are evaluated before they enter the program and at the middle and end of the school year. Intelligence and achievement testing is followed up for these children in their early primary school years.

What is a representative lesson?

The following is an example of a learning activity taken from the activity guide. The skill area emphasized is Spatial Relations and the goal is to teach the children distance concepts. Examples of activities are shown for both levels of operation, motoric and verbal.

SPATIAL RELATIONS

Conceptual Focus: Distance

Level of Representation: Index

Activities

Motoric	Verbal
1. Teacher uses a variety of objects in the room to demonstrate concepts of distance; e.g. teacher points out something that is *far*, then has the children move it so that it is *near*.	1. a. Teacher and children identify the objects. b. The teacher explains, "The chair is *far* away . . . now the chair is *near* you." c. Teacher and children use language patterns with "far" and "near".
2. Chidren experience the spatial relations of objects in the classroom by finding objects that are *near* one another and *far* from one another; e.g. the chair is *near* the table, the blocks are *not near* the dolls.	2. a. Teacher provides the instructions; e.g. "Find something that is *near* the table." b. Children say "The chair is *near* the table."

Conceptual Focus: Distance

Level of Representation: Symbol

1. Teacher shows children pictures that illustrate objects in relation to each other; e.g. picture	1. a. Teacher and children discuss the pictures; e.g. "What do you see?" "I see a table, a chair,

	of a table with a chair *close to* it and a person *far from* it.		and a man." b. Teacher asks: "Is the chair *far from* the table or *close to* the table? or "Where is the chair?" c. Children respond: "The chair is *close to* the table."
2.	Children draw pictures and the teacher emphasizes the spatial relations of the objects they have drawn.	2.	a. Teacher asks such questions as "Is the tree *close to* or *far from* the house?" or "Where is the tree?" b. Child talks about what he has drawn, and the teacher encourages him to use concepts of distance (near-far, close to-far from) to relate the objects in space.

PARENT INVOLVEMENT

To what extent are parents involved?

Because the staff of the High/Scope Foundation believes that home teaching is necessary to the preschool child's progress, a home visit component of the program has been implemented. Teachers visit the homes of their students in order to involve the parents in the children's educational development and to extend the school activities on an individual basis.

The home teaching portion of the preschool program was initiated during the five years of the Ypsilanti Perry Preschool Project (1962-1967). The objectives of the home visits were defined as:

1. To involve the parents in the teaching process by giving them background knowledge about their children's educational needs so that they can provide educational support at home.

2. To implement the curriculum on a one-to-one basis with the child in the home.

One afternoon a week for ninety minutes, the teacher visits a child's home. The home lessons are individualized in the sense that the teacher prepares her home activities on the basis of the child's current progress in the program. She selects activities in areas where the child needs extra work and also in areas currently being emphasized in the class.

The teacher brings a variety of materials into the home to give the child a choice of materials to work with; she bases her choice of materials on the skills or concepts she will teach and on what she knows from classroom experience to be the child's preferences.

As in the classroom, the teacher always has a definite plan in mind for her teaching activities. Because she can implement her lesson goal independently of the order of the activities, the child can move from one activity to another as his attention span changes. The teachers find that the children move from one activity to another fairly quickly and they can spend approximately only one hour working directly with the children.

After working with the child, the remainder of the visit is spent in informal conversation with the mother. During this informal talk, such things as materials, discipline, the child's needs, and any questions the parent might have are discussed. The teachers attempt to create a relaxed atmosphere. The staff emphasizes the importance of establishing rapport with the parents. Such rapport is necessary to give teachers the chance to

work closely with the child in the home and to avoid resentment or the refusal of the parents to participate. The developers elaborate:

> From such a rapport will follow the opportunity to provide help and support in coping with the learning problems of the children. The parents hopefully will begin to use the school for guidance and this will signify an important change in their attitude . . . bringing about such a change in attitude will in turn be a significant factor in helping the parents assume an active role in the support of their children's intellectual growth.

What materials are available for training parents?

No materials are used to train parents. The teacher attempts informally to develop the parent's feeling of self-worth and competency to help teach the child. Teachers find all parents are anxious to have their children learn and that most parents are receptive to learning what they can do to help their child succeed in school. Parents are encouraged to make simple toys and materials using things available in the house such as boxes or socks. Teachers usually leave behind some of their materials (crayons, clay, paper, etc.) and encourage parents to make a small play area for the child and try to use the materials in the same ways the teacher does.

In the home as in the classroom the teacher selects her own activities and materials. To help teachers create an atmosphere of trust and confidence conducive to learning, the program offers the following "pointers."

1. Teachers make home visits as educators, concerned first of all with the educational welfare of the children. This means that their job will be to involve both the parent and the child in the educational process.

2. A good relationship between teacher and parents is important to the parents' cultivating a better feeling toward the school. The teacher's attitude is most important in establishing this relationship; she must be more than just a professional doing a job. It may take several visits to establish trust on the part of the parent, but only through trust and mutual concern for the child can an effective relationship be established. Often a teacher will form close personal ties with a parent while establishing a working relationship in the home.

3. For the parent's role to become clearly defined, it is important that the teacher be open and direct. Often the parent is anxious about the child and doesn't know whether to discipline him while the teacher is there. The teacher must communicate her goals and expectations so that the parent can feel

more relaxed and thus participate more effectively.

4. The teacher must be able to work in homes where it may be necessary for her to suspend some of her middle-class standards, such as tidiness and promptness.

5. It is important for the teacher to feel free to discuss her feelings and apprehensions about the program with her supervisor, since there may often be times when a teacher becomes disheartened by children or parents who do not seem to be responding.

6. The teacher must spend time before her visits preparing for the child and parent. She must take into consideration such things as:

   a. The cognitive needs of the child, i.e. the levels at which he is operating.

   b. The interest of the child (animals, small cars, etc.).

   c. Ways of involving the parents in activities.

7. The teacher must think about the kinds of materials she will take on her visits and help the parents to see how they can use these and other materials with their child to implement cognitive goals. The teacher can also advise parents in the selection of materials.

8. The teacher must be ready to capitalize on opportunities for discussions with the parent. She must be prepared to talk about such things as developing inner controls in the children and using positive reinforcement to encourage desired learning behavior.

9. The teacher must be flexible in scheduling home visits so that she can maintain contact with parents; e.g. to accommodate a working mother, the teacher would have to be willing to schedule her visit for early evening.

10. The teacher must be willing to give extra time outside of school to organize parents' meetings.

An evaluation of this home teaching component is found in the Program Development and Evaluation section of this report.

PROFESSIONAL AND PARAPROFESSIONAL TRAINING

What skills or knowledge do professionals require?

Because the Cognitive Curriculum is really only a framework within which the teacher creates her own learning activities, the program demands a great deal of the teacher. Each activity must be planned according to the structure of the curriculum and this means that while the teacher is free to use her skill in developing learning activities, she is constrained by the theoretical framework.

Planning is crucial to the success of the curriculum because the teacher must sequence her activities with the individual needs of the children in mind. The teacher must always be asking, "How can the instructional program be adapted to the level at which the child is operating?" To plan effectively the teacher must thoroughly understand the Piagetian theory. She must realize that she has first a goal and then must devise an activity to implement that goal. To plan successfully the staff advises that daily classroom plans be prepared approximately one week in advance, in addition to daily planning.

Besides planning her classroom activities the teacher must prepare lessons for the afternoon home visits. She must be able to work within a team-teaching structure (described in a following question), and she must be able to take constructive criticism from her supervisor (the role of this supervisor is also discussed in a later question).

Are training programs available for professionals and paraprofessionals?

The High/Scope Educational Research Foundation conducts an optional training program for preschool and Head Start teachers in the Cognitive Curriculum approach. The training takes place in Ypsilanti and includes consultation by staff.

In addition to this training program the developers suggest that the teaching team--the teachers, aides, supervisors--provide a continuous inservice training program. They believe a teaching team is a good source of training because teachers and the aides supporting them in the classroom have excellent opportunities to work with small groups and individuals as well as to observe the children responding to specific lesson and program ideas. They believe that by such observation teachers will eventually be able to specialize in curriculum areas that especially interest and concern them, and that the information they individually gain can be effectively passed on to others, "creating an intellectual challenge directly related to real concerns of the teaching

staff." Because constructive criticism within a framework of common goals and strategies is emphasized rather than stifled, group criticism will lead to better teaching.

The classroom aides are also included in this ongoing inservice training. The staff realizes that aides often do not have the same formal educational background as the teachers and believe that both aides and teachers can benefit from continual explanations of the rationale for the curriculum and demonstrations of the theoretical ideas put into actual learning activities.

Because the supervisor is also constantly observing the teaching efforts of the team, she can design a specific inservice training program for the individual needs of the team. The staff suggests that an inservice training program include the following: discussion of the lesson plans and their application to the curriculum framework; a demonstration of teaching by the supervisor which will enable teachers to observe their children reacting to planned learning activities; and the use of the videotapes taken in actual classroom teaching.

What materials are available for professional and paraprofessional training?

A catalog of publications and films may be obtained from the High/Scope Foundation. Materials used in the formal preschool training course offered in Ypsilanti may be obtained from the High/Scope preschool-Head Start group. The staff suggests that the teaching staff on the schools adopting the program develop their own videotapes for inservice training.

ADMINISTRATIVE REQUIREMENTS AND COSTS

What facilities and physical arrangements are needed or recommended?

The classroom is physically structured in specific ways to help implement the program goals. The classroom structure is changed gradually throughout the school year as the children progress in both the cognitive skill areas and the levels of representation. This changing structure can be demonstrated by an example of a classroom set up to teach classification and seriation concepts.

The goals in these two areas are to teach the children how to group and to order (or to classify and to seriate). In the classroom all blocks and all cars are kept in separate cabinets, all books are shelved together, all puzzles are found on certain shelves, etc. This is done, not to maintain order as in some traditional preschools, but to reinforce the classification concepts of similarity and difference among objects that share or do not share certain characteristics. To reinforce seriation concepts objects in the room in the beginning of the year are of two sizes--big and little. Objects in the room are arranged so as to reinforce this concept of size, and only when the children have learned the concept of large and small is a third size introduced.

The above description is only an example of the physical arrangements that can be used to help teach concepts. On the following page is a diagram of a sample room arrangement.

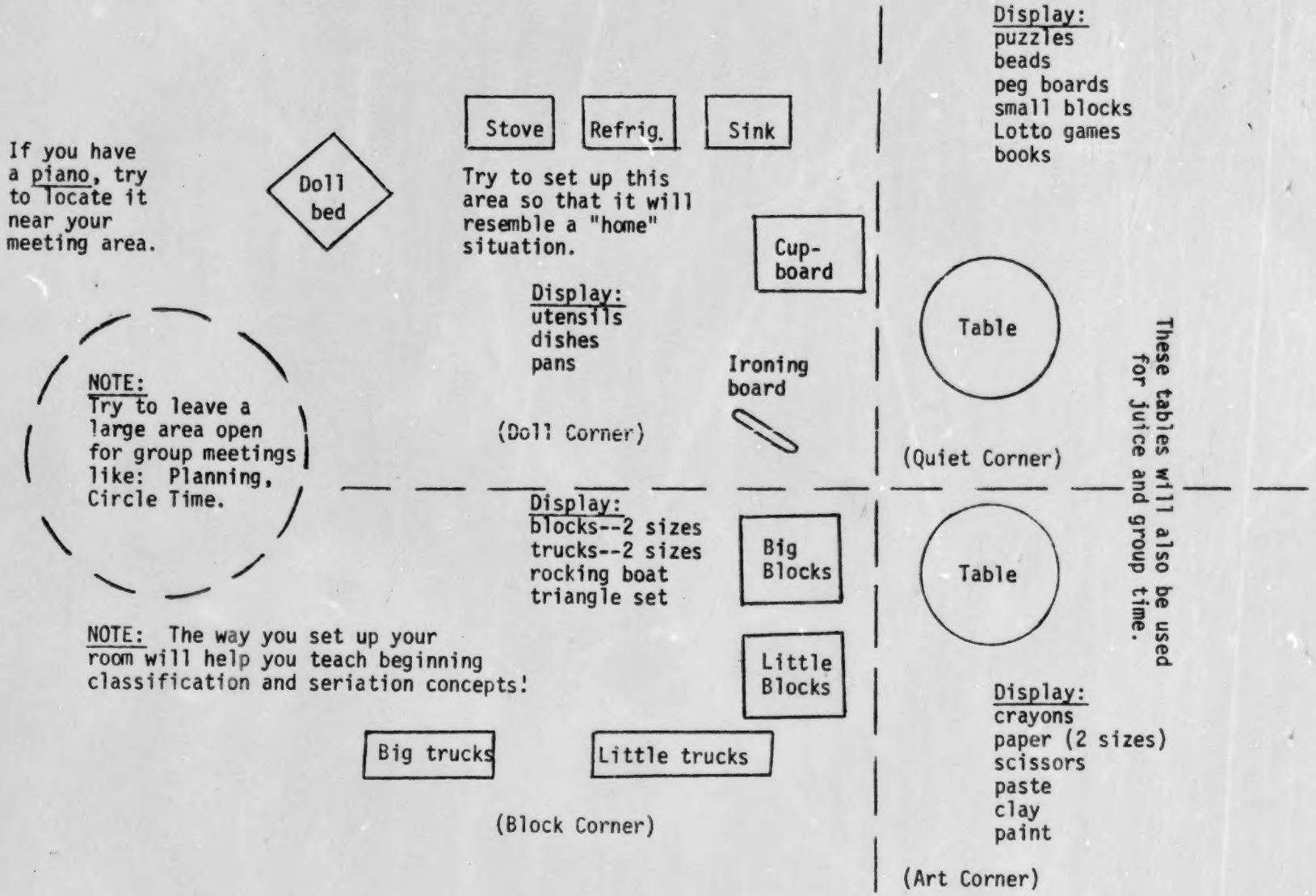
What special equipment is needed or recommended?

Specially purchased equipment is not needed. If the films and tapes developed for training purposes are used, audiovisual equipment must be secured.

What professional and paraprofessional personnel are needed or recommended?

In the Cognitive Curriculum teachers, aides and volunteers work together as a teaching team. All share the same educational goals for the children, all use the same teaching methods, and there is no clearly defined hierarchy of responsibility. The team develops parallel teaching activities, and all teach simultaneously, working from a team-developed master plan. The team serves as a forum where the teachers, aides, and the supervisor discuss curriculum theory and implementation and how the program should be adjusted to suit the individual needs of the preschool, its children, and its community.

SAMPLE ROOM ARRANGEMENT--COGNITIVE CURRICULUM



The staff suggests the following: one full-time supervisor for six classrooms, and two teachers and one aide for every 15 to 20 children (a ratio of between 1:5 and 1:8).

The staff believe that "adequate supervision is the most essential ingredient in the preschool staff model." The supervisor is an experienced teacher who has learned and understands the curriculum as a result of training and direct experience in the classroom. The supervisor holds the teachers responsible to the instructional goals of the program, raises questions about the functioning of the classroom, and helps teachers find solutions to problems within the curriculum framework. The supervisor also acts as a link between the administration and the teaching team.

From the knowledge the supervisor gains through direct involvement with the teaching staff, she is able to develop an inservice training program designed to meet the teaching needs of the team. She bases her program on classroom observation, review of teacher-prepared activity plans, and by videotaping key lessons.

What does it cost to implement the program?

The cost of the program will vary by area or region and will depend on what equipment and materials the school already has in use. The following costs represent the expenditure of the Curriculum Demonstration Project, which purchased everything new for its project classroom:

Initial purchase of equipment to establish a classroom = $2,000.00
$500/year for replacement of equipment
$500/year for expendable supplies
Cost per child for a typical year in Curriculum Demonstration Project = $1,583.00

Are curriculum materials available?

Papers, booklets and films describing the Cognitive Curriculum are available through the High/Scope Educational Research Foundation, 125 N. Huron, Ypsilanti, Michigan 48197, and from ERIC (Educational Resources Information Center) in Urbana, Illinois, where Volume I of the final report of the Perry Project is being published as *The Cognitively Oriented Curriculum: A Framework for Preschool Teachers*.

PROGRAM DEVELOPMENT AND EVALUATION

What is the research base for the program?

The Cognitive Curriculum evolved from the Perry Preschool Project which operated in Ypsilanti, Michigan, from 1961 to 1967. Briefly, the Perry Project was an experiment to assess the long-term effects of a two-year preschool program on the intellectual development of black children classified as "culturally deprived." (See following question for a more complete description of the Perry Project.)

The early years of the Perry Project (1962-1964) reflected many converging lines of theory and research in early childhood education. Theorists who have explored cognitive growth and who influenced the early design of the project include Samuel A. Kirk, Martin Deutsch, Fred L. Strodtbeck, Maurice Fouracre, Omar Moore, and J. McV. Hunt. Their works suggest that youngsters labelled as "deprived" may be directly aided by preschool experience.

Several studies influenced the decision to begin intervention at an early age. Most important was a study done by Pasamanick and Knoblock (1961) which demonstrated no intellectual differences between children grouped according to race and economic class at 1-15 months of age. However, evidence of "deprivation" did occur by three years of age in the same sample.

The program was influenced by the theories of Jean Piaget and was organized in 1964 to follow the developmental stages he described (*Play, Dreams, and Imitation in Childhood, The Psychology of Intelligence,* and *The Origins of Intelligence in Children*).

How was the program developed and tested?

As stated, the Perry Project began in 1962 as an experiment to assess the longitudinal effects of a two-year preschool designed for children classified by a series of tests, as "culturally depreived" and "functionally retarded." These children were selected for the initial study because of the availability of county and state funds for special education.

The specific population of the project was defined as three- and four-year-old children living within the boundary of the Ypsilanti Perry School District, coming from low-income families and testing in the range of "educably mentally retarded."

Forty-eight children were selected and divided into two matched groups of 24 each. The groups were matched

on the basis of I.Q. rating, "Cultural Deprivation" rating, sex, age, and percentage of working mothers. The experimental group attended the morning preschool five days a week and received one 90-minute home visit each week. Contact with the control group was limited to the collection of pertinent data.

Four teachers were employed and all had extensive teaching experience in both special education and nursery education.

Since the inception of the project in 1962 the various children who have participated in the project have been continually tested. For purposes of testing the groups of children were termed "waves". Waves 0, 1, 2, and 3 participated in the program from 1962-65. During these three years the program had not yet adopted the theories of Jean Piaget. The four teaching areas were arts and crafts, housekeeping, pre-academic, and block activities. Sensory perception language development, memorization, and concept development were stressed. Afternoon home learning visits, field trips, and monthly parent meetings were in operation.

In 1964, under the influence of the theories of Piaget, the curriculum became much more structured. The group of experimental children who started the program in this year were designated as Wave 3.

The evaluation of the progress on these children follows.

What evaluation studies have been conducted?

Data from 1962 to 1967 have been collected and evaluated. Table 1 shows 5 waves of children enrolled in the forerunner of the program (Perry Preschool Project) during that time.

TABLE 1

Status of Waves 0 Through 4 in the Analysis of the Perry Preschool Program, Through Spring 1967

Wave	1962-63	1963-64	1964-65	1965-66	1966-67
0	PK	K	G1	G2	G3
1	PK	PK	K	G1	G2
2		PK	PK	K	G1
3			PK	PK	K
4				PK	PK

Measures of achievement were used consistently to assess the progress of the children. Three intelligence tests were used: the Stanford-Binet, the Peabody Picture Vocabulary Test (PPVT), and the Leiter International Performance Scale. Each was administered in the fall of the entering year for each wave and in the spring of each year from prekindergarten through third grade.

Table 2, on the following page, shows the means for the three intelligence tests.

TABLE 2

Stanford-Binet, PPVT, and Leiter IQ Scores for Waves 0 Through 4
in the Perry Preschool Program, Prekindergarten Through Third Grade

	Fall Entering Year	Spring Entering Year	Spring Second Year	Spring Kinder-garten	Spring First Grade	Spring Second Grade	Spring Third Grade
Stanford-Binet							
Experimental	79.6	95.9	94.7	90.1	91.5	87.3	89.2
Control	78.5	83.3	83.5	84.9	83.2	96.1	88.3
PPVT							
Experimental	67.1	74.5	81.4	78.3	83.5	81.8	77.2
Control	62.2	63.7	62.9	73.2	77.9	81.0	80.5
Leiter							
Experimental	70.1	97.6	89.7	85.1	86.6	87.6	90.4
Control	59.0	72.0	77.9	81.9	85.8	87.3	85.3

Table 3, on the following page, shows the means for the California Achievement Test Battery, obtained by combining the waves.

TABLE 3

California Achievement Test Battery Scores for Waves 0 Through 3 in the Perry Preschool Program, First Through Third Grade

	Spring First Grade	Spring Second Grade	Spring Third Grade
California Achievement Test Battery			
Experimental	91.5	143.2	191.2
Control	70.7	115.3	114.9

Non-academic achievement factors also appeared on the Ypsilanti Rating Scale. This scale was developed especially for the project and was administered each spring for kindergarten through third grade in Waves 0 through 4. A pupil behavior inventory was used, covering such things as classroom conduct, academic motivation and performance, social-emotional state, etc., and with few exceptions the experimental groups received higher ratings than the controls.

These results should not be considered complete, because as shown in Table 1 the later waves have not yet reached all the grade levels. On the whole, though, the differences do favor the experimental groups in the early years, but by the second grade these differences disappear on intellectual measures. However, on social-emotional adjustment factors and on achievement, differences in favor of the experimental group persist.

According to the staff, the home teaching program met with much success. The staff discovered many things, among them: (a) it is possible to operate a home based educational program with low income families, (b) both black and white teachers were able to establish good relationships with the parents, and (c) the parents indicated a genuine interest in continuing the monthly parent meetings.

Further evaluation data have been released by the Foundation in Weikart, et al., *Longitudinal Results of the Ypsilanti Perry Preschool Project*, High/Scope Educational Research Foundation, Ypsilanti, Michigan.

The Office of Education has commissioned the Stanford Research Institute to conduct a national evaluation

of the major Follow Through models, including the Cognitive Curriculum. Final results will not be released until 1973.

PROGRAM HISTORY AND PRESENT STATUS

What is the history of the program?

The Cognitive Curriculum was developed during the course of the Perry Preschool Project. The Perry Project, funded in part by the U.S. Office of Education, was initiated in the Ypsilanti Public Schools in 1962 and emphasized general intellectual and language skills. The program was altered in 1964 to reflect the developmental theory of Jean Piaget. The program developed for the Perry Project in the years 1964-1967 is now called the Cognitive Curriculum.

The Cognitive Curriculum was tested in the Ypsilanti Preschool Curriculum Demonstration Project. This project compared the effects of three preschool curricula--the Cognitive Curriculum, the Language Training Curriculum (based on the Bereiter-Engelmann program), and the Unit-Based Curriculum, modeled after the traditional nursery school.

What is the present state of development?

Currently, the Foundation operates a Training and Development Center in Ypsilanti with preschool, kindergarten, first, and second grade classes. The Foundation is a sponsor in the National Planned Variation Head Start program, implementing the Cognitive Curriculum in centers in Seattle, Missouri, and Florida. Field services are provided by Foundation consultants.

At this time both the preschool teaching staff and the Head Start consulting staff are developing a training program in which teachers come to Ypsilanti to learn the theory and teaching techniques of the Cognitive Curriculum. The staff is also refining and further developing the curriculum in terms of both theory and application. Dissemination efforts are also underway, with written and audiovisual materials being developed.

In addition to the Demonstration Project, the High/Scope Research Foundation staff is also working on the Ypsilanti-Carnegie Infant Education Project. This project, funded by the Carnegie Corporation, the National Institute of Mental Health, and Ypsilanti Public Schools, is designed to study the effects of a home-based preventative intervention program aimed at children as young as three months.

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